

## **“The Next Billion”**

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Before September 11, we had no clue that such an attack (as the one on New York and Washington, DC) was possible. The ripple effects are still being assessed. But the aftermath of this attack is unique in the way the flow of information played a role. TVs, satellites, the Internet, etc. facilitated an instant response to the attack. The US and the world were united. Americans appreciate Japan's support.

A globally networked economy has been formed. The world's citizens are global participants—economically and politically. Individuals are personally empowered. We have inherited a legacy: a network linking a billion people. The wiring, cables, and satellites can join everyone. It took all of human history to link the first billion people together. We now have the potential of adding another billion within seven years. Japan and the US must make connectivity more affordable and accessible.

The semiconductor is at the heart of connectivity. The payoffs of connectivity can be enormous: first it empowers individuals to increase freedom and economic success; second it increases the stake of the individual in the economy, which can foster cooperation; third it promotes a stronger worldwide economy by increasing openness and prosperity. How can companies help increase connectivity?

Innovation is crucial. Companies must be leaner and more knowledge-based. Japan needs to invest in its future and revive its semiconductor industry. The next billion people to be connected will need more personal devices. The semiconductor industry can align with the consumer products industry and outsource production. Applied Materials can be a partner.

By developing relationships throughout the world, Japan can reduce costs and move to produce second-generation chips. Steady connectivity can bring unbounded optimism in this time of uncertainty to advance and preserve civilization, and turn "them" into "us."

## Question & Answer

***Q: We are not as optimistic as you are. In the DRAM market we will lose out to Korea and China. The US, meanwhile, will control the more advanced devices. So Japan finds itself sandwiched. Can Japan produce mobile devices as an answer? How do US companies compete with China?***

In 1983, Jiang Zemin visited Applied Materials. That same day, he became minister and we celebrated. That night, we found that his and our view were similar on the advancement of IT. Over the years, I have seen a dramatic transformation in China. My advice is to get engaged early in markets. We have to keep perspective: in the 1980s, we thought our industry was in decline. One billion people are now connected. There is six times that amount of people in the world as a whole. Plus, there is the need for applications to keep up with consumers' needs. It is a big opportunity. I think we are in the market's infancy; my opinion is that we are only 10% of the way.

Taiwan wanted to be in the hi-tech world. They needed something unique and evolved, so they developed their manufacturing capability for semiconductors and promoted partnerships. So you have to find an advantage and take a risk.

NEC trained our people in quality. There are many opportunities for Japanese companies to partner with companies outside Japan. It used to be that Japan was the low cost place to produce, but Taiwan learned how to do it. The changes that occurred in Japan's automobile industry have not yet occurred in its semiconductor industry.

***Q: Applied Material's "total solution" is the source of your power. But you don't have a general research department. You get your parts from the outside and unify it. How do you get your knowledge?***

We found general research departments to be isolated. Our groups get together to discuss their research. We spend one billion dollars a year in engineering development. We have more PhDs than our customers do. We use team effort and review our technical roadmaps every month.

***Q: How can governments and businesses cooperate?***

Companies must make technology more usable. Japan has the capability to produce simple, usable products. Governments and companies can provide programming that is more available, put up satellites, develop local power, and provide infrastructure.

***Q: Can you discuss the power-cost relationship?***

Lower costs and greater power are not mutually exclusive. You can have both. A bigger market would demand more semiconductors, which would require less complicated, more reliable end products. Japan has an opportunity to make the right, simple product.

***Q: Please discuss the role of business-university cooperation.***

In the US, there are incentives because university funding comes partly from the private sector, which can be healthy. One thing that you don't see much in the US anymore is the industrial research center (like the old Bell Labs).

***Q: The spread of IT can help the spread of democracy and stability. What about overcoming the rich-poor gap?***

The more information people have, the more people know how bad off they are. It is true. You can provide knowledge and opportunity to better people's lives. You cannot fix everything, so focus on what you can change. If you aren't an optimist, you probably won't succeed.

***Q: Some governments just don't want their people connected. The Saudi government comes to mind. So governments' attitudes are central. Can technology provide a way out for the citizens?***

There have always been underground information channels. As people get more information, they can make better judgments. People can be smart despite lack of education.

***Q: Did the US-Japan semiconductor agreement work to revitalize the US's semiconductor industry?***

Japan became aware that it could no longer keep out competitors. In the US we had had confrontation between the industry and suppliers. Then the two began to work together and link more effectively. The US also got better access to the Japanese market.

***Q: Can you discuss the importance of outside directors?***

I am careful about my own outside activities. Outside board members are important because it brings in a different set of perspectives, which is especially good in times of change. But it is difficult to get a good board because the people are just not available. Look at AT&T: they had a blue ribbon board, but that was a disaster. I joined the Cisco board to get perspective that is one step beyond our customers.

***Q: How can governments help?***

An aggressive depreciation policy to promote investment and a tax policy that provides incentives for research and development would help. Also matching R&D dollars would be important too. Matching is better than direct funding because you can give the management of the project to the public rather than to government bureaucrats.